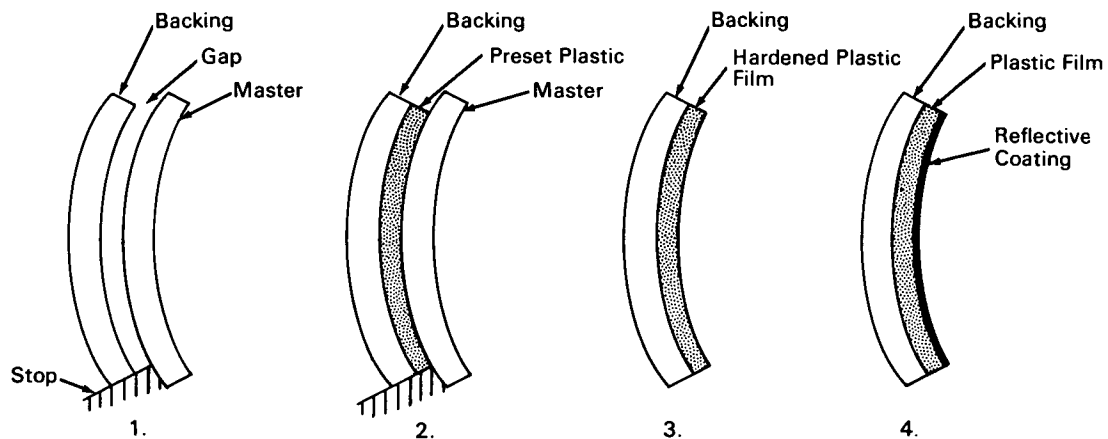


# NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

## Plastic Films for Reflective Surfaces Reproduced From Masters



**The problem:** Devising a method for rapidly producing quantities of accurate optical reflective surfaces.

**The solution:** A plastic is cast in a narrow gap formed between a backing and a removable master that has the specified contour and optical finish. After removal of the master, the exposed hardened plastic surface adhering to the backing is coated with a reflective surface by any conventional method.

**How it's done:** The backing is made from any suitable material (metal, ceramic, or rigid polymer) to which the cured plastic will tightly adhere. The optical master may be made from glass or metal, which is coated with a releasing agent, if necessary, to prevent adhesion between the master and hardened plastic. These two pieces (backing and master) are positioned in a mold to provide a uniform gap of less than 0.050 inch between the facing surfaces. Liquid or semi-liquid plastic is poured or forced under pressure into

the gap and allowed to cure under controlled conditions. When the plastic has been cured, the master is pulled away from contact with the hardened plastic surface. On highly tapered shapes it may be necessary to apply a temperature gradient (to produce differential expansion) between the master and backing to facilitate separation of the master. On completion of this process, it will be found that the surface of the plastic is an accurate reproduction of the surface of the master. A reflective finish may be applied to the plastic surface by vacuum deposition, sputtering, electroplating, or other conventional methods.

### Notes:

1. This method may be used to produce reflectors for radiation in other regions of the electromagnetic spectrum and for sound waves.
2. Plastics used for the reflectors should preferably be of the thermosetting or catalytically hardened types.

(continued overleaf)

3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Goddard Space Flight Center  
Greenbelt, Maryland, 20771  
Reference: B64-10151

**Patent status:** NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: Minneapolis Honeywell under contract to Goddard Space Flight Center (GSFC-188)